YEAR BOOK®

YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT

1992

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1992

The Year Book of ANESTHESIA AND PAIN MANAGEMENT®

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A Year Book Medical Publishers imprint of Mosby-Year Book, Inc.

Mosby-Year Book, Inc.
11830 Westline Industrial Drive
St. Louis, MO 63146

Editorial Office:
Mosby-Year Book, Inc.
200 North LaSalle St.
Chicago, IL 60601

International Standard Serial Number: 0084-3652
International Standard Book Number: 0-8151-5938-2

Journals Represented

Mosby-Year Book subscribes to and surveys nearly 900 U.S. and foreign medical and allied health journals. From these journals, the Editors select the articles to be abstracted. Journals represented in this YEAR BOOK are listed below.

ASAIO Transactions
Acta Anaesthesiologica Scandinavica
Acta Dermato-Venereologica
Acta Neurologica Scandinavica
Acta Obstetrica et Gynecologica Scandinavica
Acta Orthopaedica Scandinavica
Acta Psychiatrica Scandinavica
American Journal of Gastroenterology
American Journal of Neuroradiology
American Journal of Obstetrics and Gynecology
American Journal of Otolaryngology
American Journal of Psychiatry
American Journal of Surgery
American Review of Respiratory Disease
Anaesthesia
Anaesthesia and Intensive Care
Anesthesia and Analgesia
Anesthesiology
Annals of Emergency Medicine
Annals of Internal Medicine
Annals of Otology, Rhinology and Laryngology
Annals of Surgery
Annals of Thoracic Surgery
Annals of Vascular Surgery
Archives of Emergency Medicine
Archives of Internal Medicine
Archives of Otolaryngology—Head and Neck Surgery
Archives of Physical Medicine and Rehabilitation
Archives of Surgery
Behaviour Research and Therapy
Biology of the Neonate
British Journal of Anaesthesia
British Journal of Ophthalmology
British Journal of Radiology
British Journal of Surgery
British Journal of Urology
Canadian Journal of Anaesthesia
Canadian Journal of Neurological Sciences
Canadian Journal of Surgery
Chest
Circulatory Shock
Cleveland Clinic Journal of Medicine
Clinical Otolaryngology
Clinical Pediatrics
Clinical Pharmacology and Therapeutics
Contemporary Orthopaedics
Critical Care Medicine
European Journal of Anaesthesiology
European Journal of Surgery
Fertility and Sterility

Gut
Hepatology
Human and Experimental Toxicology
Intensive Care Medicine
International Hospital Federation
International Journal of Oral and Maxillofacial Surgery
International Journal of Pediatric Otorhinolaryngology
International Surgery
Journal of Allergy and Clinical Immunology
Journal of Applied Physiology
Journal of Bone and Joint Surgery (American Volume)
Journal of Bone and Joint Surgery (British Volume)
Journal of Cardiovascular Surgery
Journal of Clinical Endocrinology and Metabolism
Journal of Cranio-Maxillo-Facial Surgery
Journal of Dental Research
Journal of Electrocardiology
Journal of Emergency Medicine
Journal of Internal Medicine
Journal of Neurosurgery
Journal of Obstetrics and Gynaecology
Journal of Pediatric Gastroenterology and Nutrition
Journal of Pediatrics
Journal of Pharmacology and Experimental Therapeutics
Journal of Psychosomatic Research
Journal of Reproductive Medicine
Journal of Surgical Research
Journal of Trauma
Journal of Urology
Journal of Vascular Surgery
Journal of the American College of Cardiology
Journal of the American Dental Association
Journal of the American Geriatrics Society
Journal of the American Medical Association
Lancet
Mayo Clinic Proceedings
Medical and Biological Engineering and Computing
Neuroradiology
Neurosurgery
New England Journal of Medicine
North Carolina Medical Journal
Obstetrics and Gynecology
Pain
Pediatric Cardiology
Pediatric Neurology
Pediatric Nursing
Regional Anesthesia
Respiration Physiology
Southern Medical Journal
Spine
Surgery
Surgery, Gynecology and Obstetrics
Surgical Research Communications
Thorax
Thrombosis and Haemostasis

Transfusion
Urology

Standard Abbreviations

The following terms are abbreviated in this edition: acquired immunodeficiency syndrome (AIDS), the central nervous system (CNS), cerebrospinal fluid (CSF), computed tomography (CT), electrocardiography (ECG), human immunodeficiency virus (HIV), and magnetic resonance (MR) imaging (MRI).

Publisher's Preface

We are pleased to introduce to the medical and scientific communities the YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT, a title change to our YEAR BOOK OF ANESTHESIA reflecting the addition of a section of abstracts with commentary based on articles drawn from the pain management literature. With this change, the Editors acknowledge the growing importance of pain management in the anesthesiologist's practice and the need for its coverage. In adding this section, the Editors have expanded the size of the YEAR BOOK and were careful not to alter the amount of subject matter normally appearing in the volume.

With this addition of a pain management literature review, we warmly welcome Stephen E. Abram, M.D., Professor and Vice Chairman, Department of Anesthesiology, and Director, Pain Management Center, Milwaukee County Medical Complex in Milwaukee, Wisconsin. Dr. Abram's responsibilities have included selecting from the pain management literature and providing his expert commentary on this increasingly important subject. Dr. Abram has done a tremendous job with this first edition. We sincerely appreciate his contribution and look forward to his continuing participation on the YEAR BOOK's Board of Editors.

As publishers, we feel challenged to seek ways of presenting complex information in a clear and readable manner. To this end, the 1992 YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT now provides structured abstracts in which the various components of a study can easily be identified through headings. These headings are not the same in all abstracts but, rather, are those that most accurately designate the content of each particular journal article. We are confident that our readers will find the information contained in our abstracts to be more accessible than ever before. We welcome your comments.

Introduction

The 1992 YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT continues to emphasize articles that are of special concern to anesthesia in particular and to society overall. The Editorial Board attempts to identify articles of particular importance, but we tend to favor those that appear in journals that anesthesiologists are less likely to read. Because of the expanding scope of our specialty and increasing number of journals, it is more and more difficult for an anesthesiologist to keep abreast of all the literature that is available. Furthermore, subspecialty certification has begun to appear in our specialty. Several years ago, subspecialty certification in critical care medicine was instituted. In 1993 such certification will be offered to individuals involved with pain management. To keep up with these trends, the YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT added another editor, Dr. Steven Abram from the Medical College of Wisconsin, who is nationally and internationally recognized for his expertise in pain management. His presence will not only add expertise in this area, it will also expand our emphasis on pain management, which is somewhat evident in this 1992 edition. It will be more evident in 1993. Accordingly, Dr. Abram has prepared his own introduction, which follows this one.

The 1992 YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT covers a broad spectrum of articles in all areas of anesthesia. Not surprisingly, social issues are becoming more dominant. As occurred last year, the concern about AIDS, specifically but more generally, infectivity to health care personnel in the operating room, continues to be expressed. There are several articles in this edition emphasizing the dilemmas that face health care professionals in delineating a proper policy regarding testing of both patients and physicians. Another social concern is that revolving around the "right to die" issue. Accordingly, several articles here, particularly in the intensive care area, emphasize the problems associated with allowing patients the right to determine their own destiny. A nonsocial issue is the continued emphasis in our literature on various forms of monitoring during the perioperative period.

There were some surprises in the 1991–1992 literature. For example, there was much written on anesthesia care of the elderly, a subject that has not dominated previous editions of this YEAR BOOK. Although anesthetizing the elderly is obviously increasingly important, investigators apparently are now learning how to conduct objective studies in this group of patients. Also surprising was the finding of no suitable articles regarding autologous blood transfusion. This lack may reflect the fact that the medical community has accepted the need to maximize autologous blood transfusions, the safety of which is already well documented. Not surprising is the continued emphasis on cardiac anesthesia. Also, although the selection was not large, we do have a few articles regarding the use of ketorolac for the relief for postoperative pain. Clearly, this drug can replace the need for lower doses of morphine in providing analgesia. In my view, the development of non-narcotic, potent analgesics

is a major step forward in the treatment of postoperative pain. This is one of the few areas in which pharmaceutical companies should be encouraged to vigorously pursue additional research and development.

As in previous years, the Editorial Board of the YEAR BOOK OF ANESTHESIA AND PAIN MANAGEMENT will continue to seek out those anesthetic-related articles that provide a broad spectrum of clinical and scientific data as it relates to anesthesia.

Ronald D. Miller, M.D.

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1 General

Anesthetic Practice

The Deteriorating Administrative Efficiency of the U.S. Health Care System

Woolhandler S, Himmelstein DU (Cambridge Hosp, Mass; Public Citizen Health Research Group, Washington, DC)

N Engl J Med 324:1253–1258, 1991 1–1

Background.—Since 1970 the growth in the number of health care administrators in the United States has exceeded the growth in the number of physicians (Fig 1–1). By 1983 the proportion of health care dollars spent for administrative costs was 60% higher in the United States than in Canada and 97% higher than in Great Britain. To update this information, administrative costs in the United States and Canada in 1987 were examined.

Methods.—Four components of administrative costs were considered: insurance overhead, hospital administration, nursing home administra-

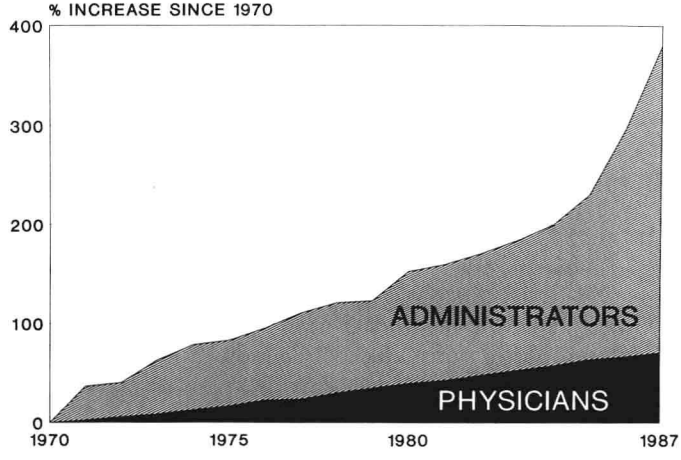

Fig 1–1.—Growth in the numbers of physicians and health care administrators from 1970 to 1987. The data are from the *Statistical Abstract of the United States* for these years (109th edition). Because of a modification in the Bureau of the Census definition of "health administrators," the change between 1982 and 1983 is interpolated rather than actual. (Courtesy of Woolhandler S, Himmelstein DU: *N Engl J Med* 324: 1253–1258, 1991.)

Cost of Health Care Administration in the United States and Canada, 1987

Cost Category	Spending per Capita*	
	U.S.	Canada
Insurance administration	106	17
Hospital administration	162	50
Nursing home administration	26	9
Physicians' overhead and billing expenses		
Expense-based estimate	203	80
Personnel-based estimate	106	41
Total costs of health care administration†		
High estimate	497	156
Low estimate	400	117

* All costs are expressed in United States dollars.
† The high estimate incorporates physicians' administrative costs derived by the expense-based method; the low estimate costs are derived by the personnel-based method.
(Courtesy of Woolhandler S, Himmelstein DU: *N Engl J Med* 342:1253-1258, 1991.)

tion, and physicians' billing and overhead expenses. The latter item was evaluated by 2 methods, 1 likely to overestimate and 1 likely to underestimate true expenses. Most costs were calculated from well-substantiated national, state, and provincial data available from health and statistics agencies and published sources.

Results.—Health care administration costs for 1987 were between $96.8 and $120.4 billion in the United States, or $400 to $497 per capita (table). These expenses accounted for between 19.3% and 24.1% health care spending. For comparison, administrative costs in Canada for 1987 were between $117 and $156 per capita, or between 8.4% and 11% of total health care costs. Between 1983 and 1987, administrative costs increased by 37% after inflation in the United States, and they declined slightly in Canada. The proportion of health care costs attributable to administration expenses in the United States is now more than double that in Canada. About half of the difference in total health care costs between the 2 countries represents administrative expenses.

Conclusions.—The administration of health care is increasingly expensive in the United States compared to Canada. If administrative costs in the United States were reduced to Canadian levels, the savings—$69 to $83.2 billion—could fund coverage for all uninsured and underinsured Americans.

▶ This provocative article reflects, I think, why so many physicians are annoyed with medicine. Perhaps the authors' best statements are the following: "Medicine is increasingly a spectator sport. Doctors, patients, and nurses

perform before an enlarging audience of utilization reviewers, efficiency experts, and cost managers." And later on in the article, "Reducing our administrative costs to Canadian levels would save enough money to fund coverage for all uninsured and underinsured Americans." I think these are powerful opinions about the forces in American medicine. But perhaps we're partially to blame. If we had done the policing ourselves and had not overused many services, we wouldn't be faced with this army of bureaucrats and spectators. Can we reverse the process without throwing out the baby with the bath water? I don't know, but I believe that our standards and the outcome studies and practice parameters initiated by the American Society of Anesthesiologists hold hope. On the other side of the coin is the greater bureaucracy and the difficulty of reducing a bureaucracy once started. I only hope that articles like this, co-authored by one of the most respected health care economists in the country, David Himmelstein, can bring those in power in Washington and elsewhere to sanity before we do throw out the good of American medicine with the bad.

Another interesting point of this article is that, at the current rate of increase, by the year 2020 more than half of the health care budget of the nation will go for administrative costs and less than 50% spent in actually providing patient benefit.—M.F. Roizen, M.D.

What Does *Cruzan* Mean to the Practicing Physician?

White BD, Siegler M, Singer PA, Iserson KV (Univ of Chicago; Univ of Toronto)

Arch Intern Med 151:925–928, 1991 1–2

Introduction.—The recent United States Supreme Court decision in the *Cruzan* case declared that states have broad powers to formulate their own rules in right-to-die cases. Whereas competent adults have a protected "liberty interest" in accepting or refusing medical treatment, these interests are subject to rational state regulation. Specifically, the holding affirmed the right of the state of Missouri to require "clear and convincing" evidence of a patient's wishes before life-sustaining treatment can be withdrawn.

Implications.—The Cruzan case has constitutionalized the competent patient's right to refuse treatment while acknowledging that states may make regulations to protect incompetent patients. States now can require clear evidence of a patient's wishes and stipulate that a judicial proceeding is necessary to determine an incompetent patient's wishes. The state need not make judgments about quality of life. Evidence of wishes regarding treatment now is a very important part of the medical history for once competent but now incapacitated patients.

Recommendations.—Patients' wishes are best discussed in advance. Use of a surrogate appointed by the patient can shift the question away from what he or she would have wanted. Under *Cruzan*, the responsibil-

ity to ensure good health care rests not with judges or family members, but primarily with patients and their physicians.

► Not since Karen Quinlan has a right-to-die case received such media attention. This article is an important summarization of the implication of the Supreme Court decision and underscores the importance of patient/physician advance discussion.—R.D. Miller, M.D.

The Economic Burden of Gallstone Lithotripsy: Will Cost Determine Its Fate?

Nealon WH, Urrutia F, Fleming D, Thompson JC (Univ of Texas, Galveston)

Ann Surg 213:645–650, 1991 1–3

Background.—The surgical removal of gallstones has remained the chief therapeutic method for nearly all of this century. The new procedure of gallstone extracorporeal shock wave lithotripsy (LITHO) has attempted to replace gallstone surgery but at much higher costs to patients and institutions. The total cost of successful LITHO treatment was evaluated, and the cost of conventional elective cholecystectomy was compared to it.

Methods.—Fifty-two patients underwent LITHO, requiring 107 procedures. Of the 215 patients (81%) excluded from this procedure, usually because of excessive stones, 100 randomly selected patients participated in this study while undergoing elective cholecystectomy. Patient care was rated for cost of therapy and length of hospital stay.

Results.—The LITHO-treated group included 42 women and 10 men (mean age, 37 years) and the cholecystectomy group included 72 women and 28 men (mean age, 41 years). The mean length of hospital stay was 2.3 days for the patients having cholecystectomy conferring a total therapy cost of $3,685 per patient. The LITHO-treated patients had a success rate of 83%, with complications affecting many of them (e.g., 43 had skin erythema). The combined individual patient costs in the LITHO-treated group, including the procedure, bile acid therapy, follow-up (mean of 11.4 months with only 23% of patients stone free), and screen, was $15,087.

Implications.—The costs of LITHO and the ultimate success rate seem to preclude the regular use of this procedure in the management of gallstones. Based on the success and low cost of elective cholecystectomy, the simplification of this standard procedure to a laparoscopic method would further establish it as the treatment of choice in patients with gallstones.

► This article is interesting and provocative in that it finds lithotripsy to be 3 to 4 times more expensive than standard elective cholecystectomy; it is clearly biased in its presentation and in its cost calculations. For instance, why is the operating room expense for lithotripsy so high? Why are the hospital room charges per day so low? Why are the laboratory test charges so high

for lithotripsy and so low for elective cholecystectomy? Clearly, there is a difference in the drugs given afterward, with the lithotripsy patients requiring bile acid therapy, but this study paints an overly costly picture for lithotripsy and an overly inexpensive one for elective cholecystectomy, especially in an era when most elective cholecystectomy patients are now having laproscopic cholecystectomies with their longer expensive operating room times.

Further, it is likely that when gallstone lithotripsy is not used with an FDA protocol, laboratory costs associated with it will decrease. And, as one gains more experience, costs should be reduced accordingly. Because of the low success rate of gallstone lithotripsy, it's not clear if it will ever see the light of day except in experimental areas. The reader who wants to know more about this procedure and to review its success rate is referred to the *New England Journal of Medicine* articles reviewing the lithotripsy experience (1, 2).—M.F. Roizen, M.D.

References

1. Sackmann M, et al: N *Engl J Med* 318: 393, 1988.
2. Schoenfield LJ, et al: N *Engl J Med* 323: 1239, 1990.

Outcome

Emergency Tracheal Intubation in the Postanesthesia Care Unit: Physician Error or Patient Disease?

Mathew JP, Rosenbaum SH, O'Connor T, Barash PG (Yale Univ)

Anesth Analg 71:691–697, 1990 1–4

Introduction.—The postanesthesia care unit (PACU) manages the patient's airway to avoid perioperative morbidity. The incidence and etiology of emergency intubations performed in the immediate recovery period were determined in 13,593 patients admitted to a PACU during a 25-month period.

Methods.—Of 13,593 patients, 26 required insertion of an endotracheal tube while in the PACU. Their preoperative, intraoperative, and postoperative records were reviewed, as were any specific notes made by the physician in attendance at the time of intubation. Criteria for intubation included apnea, tachypnea, cyanosis, increased work of breathing, and arterial blood gas levels or oxygen saturation below 90% while receiving supplemental oxygen.

Results.—Most intubations (77%) occurred within 1 hour of admission to the PACU or extubation, and 69% of the intubations were considered to be directly related to anesthetic management. There was a significant association between age and intubation: 54% of intubated patients were older than 60 years and 3% were younger than 3 years. Other significant associations included the following: 23% of those intubated had undergone otolaryngologic procedures, and 73% of all intubations occurred during the months of January through June. Gender, anesthetic

technique, and anesthetic agent were not significant factors with regard to need for intubation.

Conclusions.—Of 26 intubations, 20 (77%) were caused by complications resulting from anesthesia and surgery and were considered preventable. Better management of anesthesia and sedative effects, appropriate management of fluids, monitoring of the effect of muscle relaxants, and prevention of upper airway obstruction will help to avoid anesthesia-related complications.

► These observations speak for themselves and reflect the ongoing attempts to provide "quality control" in patient management. Overall, the incidence seems very low (commendable) considering the complexity of patient make-up and multiple drugs used in patient management.—R.K. Stoelting, M.D.

Perioperative Myocardial Ischemia in Patients Undergoing Noncardiac Surgery—I: Incidence and Severity During the 4 Day Perioperative Period

Mangano DT, Hollenberg M, Fegert G, Meyer ML, London MJ, Tubau JF, Krupski WC, and The Study of Perioperative Ischemia (SPI) Research Group (Univ of California, San Francisco; VA Med Ctr, San Francisco)

J Am Coll Cardiol 17:843–850, 1991 1–5

Introduction.—The incidence of perioperative cardiac morbidity in patients with preoperative risk factors for coronary artery disease (CAD) undergoing noncardiac operations remains high. Perioperative myocardial ischemia is the most important correlate of an adverse cardiac outcome after noncardiac procedures. The incidence and characteristics of ischemia during the immediate perioperative period were determined in 100 at-risk patients undergoing noncardiac surgery.

Methods.—Most patients were middle-aged or elderly men with CAD or risk factors for CAD. Each was monitored continuously with a 2-channel ECG recorder from up to 2 days before operation, during operation, through the first 2 postoperative days. Ambulatory ECG tapes were scrutinized for ST-segment depressions of 1 mm or more and elevations of 2 mm or more to identify potential ischemic episodes.

Results.—The total ECG monitoring time was 5,901 hours. Fifty-four patients were ischemic at some time. Preoperatively, the ECG tapes of 28 patients showed a total of 105 ischemic episodes. Intraoperatively, 27 patients had 39 ischemic episodes. Postoperatively, 42 patients had 187 ischemic episodes. Ischemia was most severe during the postoperative period, but 94% of all postoperative ischemic episodes were clinically silent. Of all ischemic episodes, 80% occurred without an acute change in heart rate, and 77% of all intraoperative episodes occurred without an acute change in blood pressure. Patients with CAD and those with only risk factors for CAD were equally likely to become ischemic at some point. Thirteen patients had an adverse in-hospital cardiac outcome.